IN THE CLAIMS:

1.   (Currently Amended)   A host ~~coupled to a cluster fabric that is coupled to~~ ~~one or more fabric-attached I/O controllers that may be allocated or assigned to~~ ~~different hosts, the host~~ comprising:

a processor;

a memory coupled to the processor; and

an operating system provided with an I/O bus abstraction to report multiple paths via a cluster fabric to a target fabric-attached I/O controller that may be ~~allocated or~~ ~~assigned to different hosts~~ shared between the host and another host via the cluster fabric, the operating system to direct service requests between the host and the target fabric-attached I/O controller in response to the multiple paths.

2.   (Original)   The host as claimed in claim 1, wherein said operating system further comprises:

a kernel; and

a fabric bus driver to provide said I/O bus abstraction to the kernel for the cluster fabric to report the multiple paths to the target fabric-attached I/O controller.

3.   (Original)   The host as claimed in claim 2, wherein said fabric bus driver presents the cluster fabric to the kernel as a local I/O bus, and presents one or more target fabric-attached I/O controllers to the kernel as local I/O controllers.

4.   (Original)   The host as claimed in claim 2, further comprising a host-fabric

adapter provided to interface the host to the cluster fabric.

5.   (Original)   The host as claimed in claim 4, further comprising a fabric adapter

device driver provided to control operation of the host-fabric adapter.

6.   (Original)   The host as claimed in claim 5, wherein said fabric bus driver

creates a separate device object for each port of the host-fabric adapter that can be

used to communicate with the target fabric-attached I/O controller and establish the

multiple paths to the target fabric-attached I/O controller.

7.   (Original)   The host as claimed in claim 5, wherein said multiple paths are

utilized for load balancing I/O requests and/or for fault tolerance when one or more

paths to the target fabric-attached I/O controller fail.

8.   (Original)   The host as claimed in claim 5, wherein said fabric bus driver

creates a single   device object for the target fabric-attached I/O controller even if

multiple ports of the host-fabric adapter can be used to communicate with the target

fabric-attached I/O controller.

9.   (Currently Amended)   An operating system for a host coupled to a cluster

fabric that is coupled to one or more fabric attached I/O controllers that may be

allocated or assigned to different hosts, comprising:

a kernel;

an I/O manager operatively coupled to the kernel;

one or more I/O controller drivers operatively coupled to the kernel, each I/O

controller driver specific for a specific type of I/O controller that may be allocated or

assigned to different hosts; and

a fabric bus driver operatively coupled to the I/O manager to provide an I/O bus

abstraction to the I/O manager to report multiple paths to a target fabric-attached I/O

controller that may be ~~allocated or assigned to different hosts~~ shared between the host

and another host via the cluster fabric, the operating system to direct service requests

between the host and the target fabric-attached I/O controller in response to the multiple

paths.

10.   (Original)   The operating system as claimed in claim 9, wherein said fabric bus

driver appears to the I/O manager as a local I/O bus driver.

11.   (Original)   The operating system as claimed in claim 9, wherein said fabric

driver presents the cluster fabric to the I/O manager as a local I/O bus and presents the

one or more fabric attached I/O controllers as local I/O controllers connected to the local

I/O bus.

12.   (Original)   The operating system as claimed in claim 9, further comprising one or more local I/O bus drivers operatively coupled to the I/O manager.

13.   (Original)   The operating system as claimed in claim 12, wherein said local I/O bus drivers and said fabric bus driver communicate with the I/O manager using a common set of procedures.

14.   (Currently Amended)   A cluster comprising:

a cluster fabric;

a host coupled to the cluster fabric, the host including an operating system;

an I/O controller attached to the cluster fabric, wherein the I/O controller may be allocated or assigned to different hosts; and

a fabric manager coupled to the cluster fabric, to assign I/O controllers in the cluster fabric to at least said host and sending messages to said host indicating that the I/O controller has been assigned;

wherein said operating system including includes a fabric bus driver provided to report multiple paths to a target fabric-attached I/O controller that may be allocated or assigned to different hosts shared between the host and another host via the cluster fabric, the operating system to direct service requests between the host and the target fabric-attached I/O controller in response to the multiple paths.

15. (Original) The cluster as claimed in claim 14, wherein said operating system further comprises a kernel, and said fabric bus driver provided said I/O bus abstraction to the kernel for the cluster fabric to report the multiple paths to the target fabric-attached I/O controller.

16. (Original) The cluster as claimed in claim 14, further comprising a host-fabric adapter provided to interface the host to the cluster fabric, and a fabric adapter device driver provided to control operation of the host-fabric adapter.

17.   (Original)   The cluster as claimed in claim 15, wherein said fabric bus driver creates a separate device object for each port of the host-fabric adapter that can be used to communicate with the target fabric-attached I/O controller and establish the multiple paths to the target fabric-attached I/O controller.

18.   (Original)   The cluster as claimed in claim 17, wherein said multiple paths are utilized for loading balancing I/O requests and/or for fault tolerance when one or more paths to the target fabric-attached I/O controller fail.

19.   (Original)   The cluster as claimed in claim 15, wherein said fabric bus driver creates a single   device object for the target fabric-attached I/O controller even if multiple ports of the host-fabric adapter can be used to communicate with the target fabric-attached I/O controller.

20. (Previously Amended) The cluster as claimed in claim 14, wherein said fabric manager comprises:

fabric services to detect the connection or presence of the target fabric-attached I/O controller and to assign a network address to the target fabric-attached I/O controller; and

an I/O controller manager coupled to the fabric services to assign the target fabric-attached I/O controller to said host and to send messages to said host indicating that the target fabric-attached I/O controller has been assigned.

21. (Currently Amended) A computer usable medium having computer readable program code embodied therein for use in a host system to report multiple paths via a cluster fabric to a target fabric-attached I/O controller ~~that may be allocated or assigned to different hosts~~, said computer readable program code when executed, cause a computer to:

create and report multiple paths from a host via the cluster fabric to a target fabric-attached I/O controller that may be ~~allocated or assigned to different hosts~~ shared between the host and another host via the cluster fabric;

enable reporting the multiple paths to the target fabric-attached I/O controller; and

direct service requests between the host and the target fabric-attached I/O controller in response to the multiple paths.

22. (Currently Amended) A method of initializing a host to report multiple paths to a target agent via a cluster fabric, comprising:

loading an operating system kernel into a memory;

loading an I/O manager into the memory;

loading a local I/O bus driver and a fabric bus driver providing a local I/O bus abstraction for the cluster fabric into the memory;

enabling the local I/O bus driver to identify any local I/O controllers connected to a corresponding local I/O bus;

enabling the fabric bus driver to identify any fabric-attached I/O controllers

assigned to the host, and report the identified local I/O controllers connected to the local

I/O bus and the identified fabric-attached I/O controllers to the I/O manager, wherein the

fabric-attached I/O controllers may be allocated or assigned to different hosts;

loading an I/O controller driver into the memory for each reported I/O controller;

enabling the fabric bus driver to create and report multiple paths via the cluster

fabric to a target fabric-attached I/O controller that may be ~~allocated or assigned to~~

~~different hosts~~ <u>shared between the host and another host via the cluster fabric</u>; and

directing service requests between the host and the target fabric-attached I/O

controller in response to the multiple paths.

23.   (Original)   The method as claimed in claim 22, wherein said identified local I/O

controllers connected to the local I/O bus and said identified fabric-attached I/O

controllers to the I/O manager are reported using a common set of procedures or

commands.

24.   (Currently Amended)   A method of initializing a host to report multiple paths

to a target agent via a cluster fabric, comprising:

loading an operating system kernel into a memory;

loading an I/O manager into the memory; and

loading a local I/O bus driver and a fabric bus driver providing a local I/O bus

abstraction for the cluster fabric into the memory;

enabling the local I/O bus driver to identify any local I/O controllers connected to a corresponding local I/O bus;

enabling the fabric bus driver to identify any fabric-attached I/O controllers assigned to the host, identifies all paths to a target fabric-attached I/O controller that may be ~~allocated or assigned to different hosts~~ shared between the host and another host via the cluster fabric, create one instance of an I/O controller driver stack for each path to the target fabric-attached I/O controller, and report all multiple paths via the cluster fabric to a target fabric-attached I/O controller that may be ~~allocated or assigned to different hosts~~ shared between the host and another host via the cluster fabric; and

directing service requests between the host and the target fabric-attached I/O controller in response to the multiple paths.

25.   (Currently Amended)   A method of initializing a host to report multiple paths via a cluster fabric to a target fabric-attached I/O device ~~that may be allocated or assigned to different hosts~~, comprising:

loading an operating system (OS) into a memory;

identifying all fabric-attached I/O devices assigned to the host, wherein the fabric-attached I/O devices may be ~~allocated or assigned to different hosts~~ shared between the host and another host via the cluster fabric;

reporting the identified fabric-attached I/O controllers; and

creating and reporting multiple paths via the cluster fabric to a target fabric-attached I/O device that may be ~~allocated or assigned to different hosts~~ shared between the host and another host via the cluster fabric; and

directing service requests between the host and the target fabric-attached I/O controller in response to the multiple paths.

26.   (Previously added) The method as claimed in claim 25, wherein the identified fabric-attached I/O devices are reported, via a fabric bus driver included in the operating system (OS) to provide a local I/O bus abstraction for the cluster fabric into the memory, using a common set of procedures or commands.

27.   (Previously added) The method as claimed in claim 26, wherein the fabric bus driver is further configured to create a separate device object for each port of the host that can be used to communication with the target fabric-attached I/O device and establish the multiple paths to the target fabric-attached I/O device, via the cluster fabric.

28.   (Previously added) The method as claimed in claim 26, wherein the multiple paths are utilized for load balancing I/O requests and/or for fault tolerance when one or more paths to the target fabric-attached I/O device fail.

29.   (Currently Amended)   A method of initializing a host to report multiple paths via a cluster fabric to a target I/O device that may be ~~allocated or assigned to different hosts~~ shared between the host and another host via the cluster fabric, comprising:

loading a local I/O bus driver and a fabric bus driver providing a local I/O bus abstraction for the cluster fabric into a memory;

identifying, using the local I/O bus driver, local I/O controllers connected to a local I/O bus in the host;

identifying, using the fabric bus driver, fabric-attached I/O devices that may be ~~allocated or assigned to different hosts~~ shared between the host and another host via the cluster fabric and that are assigned to the host in order to determine multiple paths to a target fabric-attached I/O device that may be ~~allocated or assigned to different hosts~~ shared between the host and another host via the cluster fabric, and report all multiple paths to the target fabric-attached I/O device via the cluster fabric; and

directing service requests between the host and the target fabric-attached I/O controller in response to the multiple paths.

30.   (Previously added) The method as claimed in claim 29, wherein the multiple paths are utilized for load balancing I/O requests and/or for fault tolerance when one or more paths to the target fabric-attached I/O device fail.